



THE ATMOSPHERIC RESERVOIR

Examining the Atmosphere and Atmospheric Resource Management

El Nino: On the Comeback?

By Aaron Gilstad

Many of you have heard of El Nino (pronounced el-NEEN-yo) and La Nina (pronounced la-NEEN-ya) over the past few years and how they may have been responsible for the changes in our weather patterns. Some of you may even be wondering if our strange winter weather pattern was a result of an unforecasted El Nino. Although this is not the case, it appears another El Nino event is beginning over the eastern Pacific Ocean and will possibly affect our weather next winter. So, if another El Nino event develops, how would it affect our weather here in North Dakota? First, let's explore what El Nino is and how it can modify weather patterns.

El Nino begins along the equator off the coast of Peru and Ecuador when a marked warming of the eastern Pacific Ocean is observed. This warming generally results in an increase in persistent precipitation along the equator at the international dateline southwest of Hawaii. The warming of the surface water and increased precipitation are actually a result of a domino effect caused by a change in the intensity of the trade winds. Consequently, the overall warming of the sea surface further weakens the trade winds and intensifies El Nino conditions. In El Nino years, the normally easterly trade winds, which cause an upwelling of cold, nutrient enriched water from deep in the ocean, are suppressed or even reversed. Over time this causes a decrease in the nutrients that fish rely on for food, therefore decreasing the fish population in the area. This event

was first named El Nino (meaning "the Christ Child" in Spanish) by South American fishermen whose livelihoods were impacted by the reduced fish population, as it typically manifests itself around the time of the celebrated birth of Christ. In the scientific community, it is referred to as El Nino Southern Oscillation, or ENSO for short.

The effects on the weather patterns resulting from changes in the sea surface temperature are believed to have a "ripple effect" throughout the world. El Nino events of short duration produce relatively inconsequential effects on worldwide weather, however, the longer the event, the more dramatic the climatic effects on a global scale. These lengthy ENSO events are believed to be responsible for all matter of mayhem, ranging from excessive precipitation in some locations, drought conditions in others, and increases or decreases to normal temperature regimes.

Because the study of El Nino is still fairly new, and like any weather pattern, no two are exactly alike, it is very difficult to determine the exact

effects of such an event. Most scientists will agree, however, that in the United States we expect to experience drier than normal conditions during the monsoon season in the southwest U.S. and in the fall and winter in the Pacific Northwest. We can also expect wetter than normal conditions during the winter for the Gulf Coast states, and a warmer than normal fall and winter in the northern Great Plains. These effects will depend greatly on the intensity and duration of this new ENSO event, which began in early January.

So, it appears that our hiatus from the weather patterns associated with El Nino may be over. To what degree we are affected by ENSO this fall and winter will depend on how strongly it develops in the coming months. ■

Atmospheric Resource Board
North Dakota State Water Commission
900 East Boulevard, Bismarck, ND 58505
701) 328-2788
Internet: <http://www.swc.state.nd.us/ARB/>
ND Weather Modification Association
PO Box 2599, Bismarck, ND 58502
701) 223-4232

